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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/449,034	11/24/1999	LOWELL D. BOK	4865/49-BFG1	5756

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EXAMINER

BURCH, MELODY M

ART UNIT	PAPER NUMBER
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3683

DATE MAILED: 04/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/449,034

Applicant(s)

BOK ET AL.

Examiner

Melody M. Burch

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5, 11 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11 and 13-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Objections***

1. Claims 11 and 13 are objected to because of the following informalities: In line 4 of the claims "comprises" should be changed to --comprise--. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re: claim 1. The phrase "end plate and pressure plate comprise disks of three different wear portions" in line 3 of the claim is indefinite. It is unclear to the Examiner whether or not Applicant intends to claim the end plate and the pressure plate each comprising a brake disk as clearly set forth in claims 11, 13, and 16. If this is the intent, Examiner recommends using claim language similar to that utilized in lines 3-4 of claim 11, for example.

Re: claims 11, 13, and 16. The phrase "...an end plate, a pressure plate and

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three rotors and two stators interleaved between said rotors..." in lines 1-2 of claim 11, for example, is indefinite. It is unclear what the three rotors being interleaved between the rotors means. The language describing the arrangement of the elements is unclear. Clarification is required. A similar issue exists in lines 1-2 of claims 13 and 16.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5, 11, and 13-16 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Canadian Patent CA-2004091 in view of Bok '895.

Re: claims 1, 4, 5, 11 and 13. CA-2004091 shows in figures 1 and 2 a brake disk assembly comprising an end plate 4,S5, a pressure plate 5,S1 and initially brake disks R1-R4 and S1-S5 axially aligned and disposed therebetween, wherein the brake disks, end plate and pressure plate comprise disks of three different wear portions whereby disks of a first thickness S1, R1, R2 (thickness =  $E+4e$ ) have an initial wear portion ( $4e$ ), disk of a second thickness S3 (thickness =  $E+3e$ ) have approximately two thirds ( $3e$ ) of the initial wear portion of the first thickness disk, and disk of a third thickness S5 (thickness =  $E+e$ ) have approximately one third ( $e$ ) of the initial wear portion of the first thickness disk, the brake disk assembly including disks of a first, second, and third thickness, whereby at an overhaul the available wear portion of the first thickness disk is approximately equal to the initial available wear portion ( $3e$ ) of the second thickness

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disk, and the available wear portion of the second thickness disk is about equal to the initial available wear portion (e) of the third thickness disk, and the available wear portion of the third thickness disk is substantially fully worn, whereby the third thickness disk is removed and replaced with disk of a first, second or third thickness as disclosed from the last paragraph on pg. 3 to the end of the first full paragraph on pg. 5 of the English translation, but does not disclose that the ratio of the initial available wear portion of the second and third thickness disks are exactly  $2/3$  and  $1/3$  of the initial available wear portion of the first thickness disk, respectively, and does not show in the two figures that the second and third thickness disks each comprises a plurality of disks.

Bok '895 teaches in col. 5 lines 40-42 that the thickness of the wear portions may be varied to obtain certain advantages provided by the embodiments - one advantage being piston travel. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the available wear portions of the second and third thickness disks of CA-2004091, in view of the teachings of Bok, to have been exactly  $2/3$  and  $1/3$  of the initial available wear portion of the first thickness disk, respectively, or any other appropriate ratio as determined by routine experimentation in order to optimize system performance by utilizing the appropriate thickness discs to achieve the desired performance results.

CA-2004091 teaches in figures 1 and 2 the use of a brake structure of a first thickness comprising a plurality of disks S1, R1, R2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the disk

stack of CA-2004091, as taught by the disks of a first thickness of CA-2004091, in order to provide a means of increasing the braking capacity of the assembly.

Re: claim 2. CA-2004091 shows an actuator 3 in figures 1 and 2.

Re: claims 3 and 16. CA-2004091, as modified, teaches the use of a plurality of rotors and stators in figures 1 and 2. It would have been obvious to one of ordinary skill in the art to have constructed the brake assembly of CA-2004091, in view of the teachings of CA-2004091, with a varying number of rotors and stators depending on the amount of braking force required which would be based on the type of aircraft in which the brake would be used.

Re: claims 14 and 15. Bok '895 teaches in figure 4 the use of a pressure plate left side 48 and an end plate right side 48 which also comprise brake disks. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the brake assembly of CA-2004091, as modified, to have included a pressure plate and an end plate comprising brake disks, as taught by Bok '895, in order to provide increased braking capacity. Bok '895 also teaches in col. 5 lines 40-42 that the thickness of the wear portions may be varied to obtain certain advantages provided by the embodiments - one advantage being piston travel. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the available wear portions of the pressure plate and end plates comprising brake disks of CA-2004091, as modified, in view of the teachings of Bok, to have included available wear portions of differing or specifically two times the thickness of the other or any other appropriate ratio as determined by routine

experimentation in order to optimize system performance by utilizing the appropriate thickness discs to achieve the desired performance results.


### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

mmb 4/11/02  
mmb  
April 11, 2002

  
JACK LAVINDER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3800  
4/11/02